THE IMPACT OF DIETARY CALCIUM, PHOSPHORUS, AND VITAMIN D ON THE BONE MINERAL CONTENT OF SPINAL MUSCULAR ATROPHY PATIENTS

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This paper explores the relationship between spinal muscular atrophy patients’ dietary records and the results from their Dual Energy X-ray Absorptiometry scans. Spinal muscular atrophy (SMA) is an autosomal recessive neurogenetic disorder of the central nervous system caused by a homozygous gene deletion in the survival motor neuron gene 1 (SMN1). Another gene, SMN2, encodes a protein that is nearly identical to SMN1, but it is generally spliced in such a way that it produces only 10% of the full-length protein product. While the severity of this disease is modified by a variety of factors, it has been shown that without adequate SMN protein, anterior horn cells degenerate, leading to secondary muscle weakness. People afflicted with SMA experience further complications as a result of this disorder. One such complication is the increased risk of bone fractures. Initially, this paper explores spinal muscular atrophy’s effect upon normal nerve, muscle, and bone development, followed by a discussion of the roles that the calcium, phosphorus, and vitamin D play in bone health. Subsequently, this paper presents various SMA patients’ dietary records and compares them to results from the patients’ DEXA scans. The purpose of this study is to examine the additional impact that micronutrients have on the overall bone health of SMA patients.